REMARKS

The Office Action dated October 8, 2003 has been received and carefully noted. The following remarks are submitted as a full and complete response thereto. Accordingly, claims 1-9 are pending in this application and are submitted for consideration.

Applicant respectfully acknowledges the courtesies extended to Applicant's representative during the January 8, 2004 telephonic interview. The points discussed during the interview are incorporated herein.

During the interview, the Examiner maintained his position with respect to the prior art rejection of claims 1-5. Applicants respectfully disagree with the interpretation of the applied references discussed during the telephonic interview for the reasons set forth below.

35 U.S.C. § 102(e)

Claims 1-5 were rejected under 35 U.S.C. § 102(e) as being anticipated by Suyama et al. (U.S. Patent No. 6,055,255, "Suyama"). In making this rejection, the Office Action asserted that Suyama discloses each and every element of the claimed invention. However, Applicant respectfully submits that claims 1-5 recite subject matter that is neither taught nor disclosed in Suyama.

Applicant's amended claim 1 recites a semiconductor laser. The laser includes an n-type clad layer and a p-type clad layer. An active layer is sandwiched by the n-type clad layer and the p-type clad layer. A current constriction layer for current confinement and light confinement consists of at least two layers which are disposed in

either of the n-type clad layer and the p-type clad layer. A first layer of the current constriction layer closer to the active layer has a different conductivity type from a conductivity type of either of the clad layers in which the current constriction layer is provided and is made of a material having almost the same refractive index as the clad layer, the refractive index of the first layer being smaller than that of the active layer. A second layer of the current constriction layer further from the active layer is made of a material having a smaller refractive index than the first layer.

The first layer of the current constriction layer of the present invention is a layer that does not absorb the emitted light and scarcely has a light confinement effect and has a main function of current confinement. Consequently, the first layer is made of a material having almost the same refractive index as the clad layer and smaller than that of the active layer, as recited in amended claim 1. The second layer of the current constriction layer is a layer with a light confinement effect and is made of a material with a refractive index smaller than that of the first layer, as further recited in Applicant's amended claim 1.

Suyama discloses a semiconductor laser that has an oversaturated absorption layer, saturable absorbing layer 9 (first current blocking layer). As shown in Fig. 1, the semiconductor laser 100 is formed by placing a clad layer 3 formed from n-$Al_{0.5}Ga_{0.5}As$ formed on a buffer layer 2. On top of the clad layer 3 is formed an active layer 4. This active layer 4 is formed from $Al_{0.14}Aga_{0.86}As$. A second clad layer 5 formed from p-$Al_{0.5}GA_{0.5}As$ is formed on active layer 4. Etching stopping layers 6 and 8 are formed on clad layer 5. The first current blocking layer 9 is formed as a saturable absorbing layer from n-$Al_{0.14}Ga_{0.86}As$. A second current blocking layer 10 is formed from n-$Al_{0.6}Ga_{0.4}As$

on current blocking layer 9. The second current blocking layer 10 does not absorb light. A protection layer 11 is provided on the second current blocking layer 10. A third clad layer 12 is formed from p-$Al_{0.5}Ga_{0.5}As$ on protection layer 11. Clad layer 12 is followed by a cap layer 13 and an electrode layer 14.

In Suyama, the first layer is a saturable absorber layer and the second layer is a light confinement layer formed in a current constriction layer. In Fig. 1, the first current blocking layer 9 (first layer) is made of material with a refractive index nearly similar to that of the material of the active layer, and the second current blocking layer 10 (second layer) is made of material with a refractive index smaller than that of the active layer.

Consequently, Suyama forms the saturable absorbing layer 9 in the current blocking layer as the first layer in order to obtain a self-sustained pulsation type laser. In Suyama, it is necessary to use the oversaturated absorption layer (first layer) with a refractive index similar to that of the active layer so that oversaturated absorption effects can be exhibited in the current blocking layer. These effects are recited in claims 3 and 5 of Suyama.

This is also the case in Fig. 9 of Suyama. Consequently, even in Fig. 9, the first layer is a saturable absorber layer as in Fig. 1. That is, the first layer 30 has almost the same refractive index as that of the active layer 24. In Fig. 9, it is disclosed that the first layer 30 is formed by a superlattice structure of $Al_{0.5}Ga_{0.5}As$ and GaAs, and it is described at column 11, line 5 to line 6 that the average Al mole fraction is 0.13. That is, from the viewpoint of refractive index, it has the same structure as that of Fig. 1.

However, in contrast, the present invention has a structure with no saturable absorbing layer provided. The first layer of the present invention has a composition

nearly similar to that of the clad layer which does not absorb light emitted at the active layer, as in claim 1.

The Office Action stated that in lines 1-21 of column 11 of Suyama, it is described that the first layer 30 has almost the same refractive index as the clad layer and smaller than that of the active layer. However upon review of this section, no such description can be found.

Further, as stated above, the first layer 30 of Suyama has a super-lattice structure, so it appears that the Office Action has taken the position that part of the first layer the same as the clad layer. However, upon review of Fig. 9, it is also unclear as to where this is taught.

In contrast, amended claim 1 of the present invention recites that the first layer of the current constriction layer closer to the active layer has a different conductivity type from a conductivity type of either of the clad layers in which the current constriction layer is provided and is made of a material having almost the same refractive index as the clad layer, the refractive index of the first layer being smaller than that of the active layer. Whereas the first layer of Suyama is made of material with a refractive index almost the same as that of an active layer. It is well known in the art that the refractive index of the clad layer is smaller than a refractive index of an active layer in a semiconductor laser.

In addition, Suyama fails to disclose or suggest the feature of claim 4 of the present invention in that the inclination angle of the striped trench of the first layer is smaller than the inclination angle of the striped trench of the second layer. The Office Action took the position that Fig. 9 shows that the angle of the inclined surface of the

first layer is smaller than the angle of the inclined surface of the second layer. Claim 4 of the present invention is dependent on claim 3 which recites that the width of the stripe trench of the first layer is smaller than that of the stripe trench of the second layer.

However, in the structure of Fig. of Suyama, the stripe width of the first layer portion is greater than the stripe width of the second layer portion.

In sum, Suyama fails to disclose or suggest the present invention. Specifically, Suyama fails to disclose or suggest a first layer of the current constriction layer closer to the active layer is made of a material having almost the same refractive index as the clad layer, the refractive index of the first layer being smaller than that of the active layer, as recited in amended claim 1. Suyama also fails to disclose or suggest that the width of the stripe trench of the first layer is smaller than that of the stripe trench of the second layer, as recited in claim 3 or that the inclined surface of the first layer has a smaller inclination angle than the second layer, as recited in claim 4.

Therefore, it is respectfully submitted that the Applicant's invention, as set forth in claim 1, is not anticipated within the meaning of 35 U.S.C. § 102.

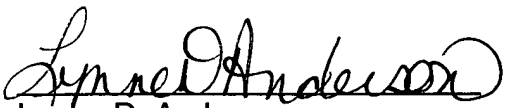
Further, as claims 2-5 depend from claim 1, Applicant submits that these claims recite subject matter that is neither disclosed nor suggested by the prior art, for at least the reasons set forth with respect to claim 1.

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding rejections, allowance of claims 1-5, and the prompt issuance of a Notice of Allowability are respectfully solicited.

If this application is not in condition for allowance, the Examiner is requested to contact the undersigned at the telephone listed below.

In the event this paper is not considered to be timely filed, the Applicant's respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing docket number 107400-00026.**

Respectfully submitted,
ARENT FOX KINTNER PLOTKIN & KAHN PLLC



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